02-21-03-F-0068 March 6, 2003

BIOLOGICAL OPINION SUMMARY
Effects of the Proposed State Route 82 Santa Cruz River Bridge Project
in Santa Cruz County, Arizona

Date of opinion: March 6, 2003

Project: Effects of the Proposed State Route 82 Santa Cruz River Bridge Project in Santa Cruz County, Arizona

Location: Santa Cruz County, Arizona

Listed species affected: Endangered Gila topminnow (*Poeciliopsis occidentalis occidentalis*)

Biological opinion: No Jeopardy

Incidental take statement:

Anticipated take: *Exceeding this level may require reinitiation of formal consultation.*

1. All Gila topminnow in the project area in the form of capture and harassment, as fish are captured, held, and released immediately back into the river into the most promising nearby habitat (judged on permanence or connection to permanent habitat).

2. Up to 10 Gila topminnow as a result of mortality due to stress during proposed capture and holding of fish.

3. Up to 20 Gila topminnow as a result of mortality or injury during construction of the diversion channel. Because dead or injured Gila topminnow will be difficult to detect, the following will also indicate that take, as measured in items 2 and 3, has been exceeded: More than 40 fish of any species are found dead in the Santa Cruz River during required monitoring.

4. Up to 50 Gila topminnow as a result of mortality or injury caused by vehicle or equipment use in the Santa Cruz River during maintenance activities. Because dead or injured Gila topminnow will be difficult to detect, the following will also indicate that take, as measured in item 5, has been exceeded: More than 100 fish of any species are found dead in the Santa Cruz River during required monitoring during construction.

Terms and Conditions: 1.1. The FHWA shall designate a field contact representative (FCR) who shall be responsible for overseeing compliance with these terms and conditions and proposed minimization measures, and shall also be responsible for coordination on compliance with the Fish and Wildlife Service. The FCR shall have the authority and the responsibility to halt all project activities that are in violation of these terms and conditions. The FCR shall have a copy of the terms and conditions and proposed minimization measures of this biological opinion while on the work site. The FCR does not have to be a biologist. The FCR should have contact telephone numbers for our office in Phoenix and Tucson.

1.2. Construction personnel shall be informed of terms and conditions and proposed minimization measures herein, and the need to comply with them.

2.1. If any surface water exists in the Santa Cruz River during work in the channel, the following terms and conditions shall be implemented:

2.1.1. Proposed capture of fish shall follow established protocols. Identity of Gila topminnow shall be confirmed by at least one fisheries biologist able to identify topminnow and mosquitofish.

2.1.2. Only qualified fisheries biologists permitted by us and the Arizona Game and Fish Department shall capture and transport Gila topminnow.

2.2. When possible, ADOT shall wait until there is no flow at the site before constructing the diversion or doing maintenance.

3.1. The FHWA shall monitor implementation of the proposed action and these terms and conditions. A qualified biological monitor shall be present in the project area each day construction crews work in the channel when water is present. During monitoring, the monitor shall document and record any take of Gila topminnow, dead fish of any species, and take notes on the condition of the habitat. We encourage development of a standard form to record these data. A brief written report shall be prepared by the biological monitor summarizing the results of such monitoring and documentation; the report shall also describe any deviations from the proposed action, and procedures and results of fish captures, transport, holding, and release. This report shall be submitted within one year of completion of construction. The report shall also make recommendations, as needed, for modifying or refining these terms and conditions to enhance protection of the Gila topminnow or reduce needless hardship on the FHWA and its applicant.

Conservation recommendations: *Implementation of conservation recommendations is discretionary.*

1. The FHWA should work with us and the Arizona Game and Fish Department to reestablish the Gila topminnow into suitable habitats (Recovery Plan Task 2; Weedman 1999).

2. The FHWA and ADOT should work with us and the Arizona Game and Fish Department to begin an aggressive program to ensure that nonindigenous aquatic organisms are not introduced to the action area, and if they are, to support actions to remove them (Recovery Plan Task 1.4, 2.4; Weedman 1999).

3. FHWA and ADOT should design bridges that span the entire floodplain, so that floodplain function is not impaired (Recovery Plan Task 1.3, 2.3; Weedman 1999).

4. The box culvert proposed for Proto Canyon Wash and other box culverts should follow Rosgen design specifications (Rosgen 2001). In a box culvert with three sections, the middle section is built at a lower elevation, corresponding to the main channel, to handle smaller flows (up to bankfull). The two outer sections handle floods greater than bankfull. This design, when placed across the width of the floodplain, minimizes impacts of the structure to stream function and minimizes sediment build-up and the maintenance associated with it in the culvert. Refer to the appendix for a stylized design (Recovery Plan Task 2.3; Weedman 1999).

United States Department of the Interior
U.S. Fish and Wildlife Service
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021
Telephone: (602) 242-0210 FAX: (602) 242-2513

AESO/SE
02-21-03-F-0068 March 6, 2003

Mr. Robert E. Hollis, Division Administrator
Arizona Division
Federal Highway Administration
Phoenix, Arizona 85004

Dear Mr. Hollis:

This document constitutes the U.S. Fish and Wildlife Service's (FWS) biological opinion based on our review of the proposed State Route 82 Santa Cruz River Bridge Project (File No. BR-082-A[003]) in Santa Cruz County, Arizona, and its effects on the endangered Gila topminnow (*Poeciliopsis occidentalis occidentalis*) under section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). We received your December 9, 2002, request for formal consultation on December 10, 2002.

The Federal Highway Administration (FHWA) determined the project would not affect the endangered lesser long-nosed bat (*Leptonycteris curosoae yerbabuenae*), endangered cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) with proposed critical habitat, endangered desert pupfish (*Cyprinodon m. macularius*), threatened Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), threatened Chiricahua leopard frog (*Rana chiricahuensis*), and the proposed endangered Gila chub (*Gila intermedia*) with proposed critical habitat. These species will not be discussed further in this biological opinion.

This biological opinion is based on information provided in the December 3, 2002 biological assessment, telephone conversations, meetings, and other sources of information. A complete administrative record of this consultation is on file in this office. We have assigned log number 2-21-03-F-0068 to this consultation. Please refer to that number in future correspondence on this consultation.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Arizona Department of Transportation (ADOT) proposes to construct turn lanes on State

Route (SR) 82, remove and reconstruct the Santa Cruz River Bridge, and construct a pedestrian pathway. The purpose of the proposed work is to construct a right-turn lane at Kino Springs Drive, provide a continuous two-way left-turn lane throughout the project limits, and to replace the Santa Cruz River Bridge, which is structurally deficient and functionally obsolete. This project will enhance traffic operations by providing improved access to the Nogales Suburban Fire Station and the Santa Cruz Elementary School, and will serve the projected future traffic demand resulting from the build out of the Estancia Yerba Buena (Kino Springs) development project. The project site is depicted in Figure 1.

The existing roadway within the project limits is 34 feet wide with two 12-foot-wide travel lanes and two 5-foot wide shoulders. The proposed project includes right-turn lanes at the intersection of SR 82 and Kino Springs Drive (MP 5.63) and at the intersection of SR 82 and Duquesne Road (MP 5.85). Three driveways serving private and public properties are located on the north side of SR 82 and will be paved to the right-of-way line. The construction of a continuous two-way left-turn lane will require the extension of existing cross drainage structures (two corrugated metal pipes [CMPs] and one concrete box culvert [CBC]) to convey water beneath the widened roadway. In addition, the Kino Springs Drive approach angle to SR 82 will be realigned and a 3-barrel 6-foot by 10-foot CBC will be installed to convey water beneath Kino Springs Drive from Proto Canyon Wash into the existing sediment basin adjacent to the Santa Cruz River.

Project construction also includes replacing the existing Santa Cruz River Bridge, which crosses the Santa Cruz River at MP 5.67. The new bridge will have two 12-foot-wide travel lanes, one in each direction, a 12-foot-wide left turn lane, and two 10-foot-wide shoulders, resulting in a 56-foot-wide clear roadway. A 6-foot-wide sidewalk pathway will be constructed for pedestrian access.

The new bridge will be an eight-span, reinforced concrete closed-cell bridge. The design includes the installation of a concrete floor about five feet below the elevation of the low flow channel for scour protection. After construction, the channel will be regraded over the concrete floor to preconstruction elevations. The new bridge has been designed to slope toward the approach roads to convey storm water runoff and spills toward the drainage easements and spillways. Solids carried by storm water runoff will settle out in the drainage easements or behind existing berms before storm waters flow into the Santa Cruz River.

While the Santa Cruz River is normally dry at the site, construction may proceed in the presence of low flows. Project construction in the riverbed will not occur during periods of high flows, which accompany occasional heavy precipitation events. In anticipation of flow events, a diversion channel (about 2-feet deep and 25-feet wide) would be constructed to direct flows around and away from the immediate construction area. Bridge construction will not proceed when flows, cannot be contained within the diversion channel. The contractor will be required to use best management practices when constructing the diversion channel.

The ADOT standard operation procedures require that material storage and contractor staging

areas be located away from the river. The contractor will be required to keep equipment out of the low-flow channel. All construction equipment will be removed from the riverbed before the onset of storm events. Project construction will occur in four phases with construction progressing from the south (upstream) to the north (downstream).

Clearing of vegetation for bridge construction, extension of two CMPs and one CBC, roadway widening, and the staging area will result in the loss of an undetermined number of shrubs and tree species with a diameter at breast height (dbh) of less than two inches. There will be 29 or more trees with a dbh greater than 2 to 4 inches removed and 31 trees with a dbh greater than four inches dbh removed. This includes 20 trees with a dbh greater than six inches scattered throughout the project site (Ecoplan 2002:5).

Roadway improvements throughout the project area will disturb up to 3.9 acres of roadside ground surface. Following construction, disturbed areas outside the riverbed will be reseeded with native plant species (including trees). In response to removing trees within jurisdictional waters of the U.S., ADOT will pay in-lieu fees to the Audubon Society in the amount of $5,700.00 for the acquisition, restoration, enhancement, or preservation of high-quality habitat in Arizona at the Santa Cruz River north of Marana.

The FHWA and ADOT have included other conservation measures as part of the proposed action. To minimize potential effects to bats, gaps between the existing bridge deck and abutments, which represent potential bat roosts, will be sealed with foam insulation in January 2003 to ensure that bats will not be present upon demolition of the structure.

To minimize potential effects to the Gila topminnow and other fish, the flow channel of the Santa Cruz River will be temporarily diverted to contain flowing water to the side of the river channel opposite the area of construction. If flows occur within the river channel before construction and excavation (or shifting) of the diversion channel, block seines will be placed upstream and downstream of the right-of-way limits (50 feet on either side of the bridge centerline) before the excavation of the diversion channel. Fish will be removed in the area between the seines using dip nets, seines, or electroshocking equipment. All fish captured will be moved downstream of the diversion by a qualified, permitted biologist. The block seines will remain in place until after the diversion channel is constructed. Immediately following diversion of flow, project biologists will capture any fish stranded in residual pools and relocate them to the main flow channel downstream of the project area.

We will be contacted immediately if Gila topminnows are encountered during fish removal efforts. Diversion will not occur when flow levels cannot be contained within the temporary diversion channel (Tom Ashbeck, Ecoplan, pers. comm., December 26, 2002).

STATUS OF THE SPECIES (range-wide)

Gila topminnow

The Gila topminnow was listed as endangered in 1967 without critical habitat (USFWS 1967). The reasons for decline of this fish include past dewatering of rivers, springs, and marshlands; water management including impoundment, channelization, diversion, and regulation of flow; land management practices that promote erosion and arroyo formation; and the introduction of predacious and competing nonindigenous fishes (Miller 1961, Minckley 1985). Life history information can be found in the 1984 recovery plan (USFWS 1984), the draft revised Gila topminnow recovery plan (Weedman 1999), and references cited in those plans.

Gila topminnow are highly vulnerable to adverse effects from nonindigenous aquatic species (Johnson and Hubbs 1989). Predation and competition from nonindigenous fishes have been a major factor in their decline and continue to be a major threat to the remaining populations (Meffe et al. 1983, Meffe 1985, Brooks 1986, Marsh and Minckley 1990, Stefferud and Stefferud 1994, Weedman and Young 1997). The native fish fauna of the Gila basin and of the Colorado basin overall, was naturally depauperate and contained few fish that were predatory on or competitive with Gila topminnow (Carlson and Muth 1989). The introduction of many predatory and competitive nonindigenous fish, frogs, crayfish, and other species, made it difficult for Gila topminnow to survive in many of their former habitats, or the small pieces of those habitats that had not been lost to human alteration. Both large (Bestgen and Propst 1989) and small (Meffe et al. 1983) nonindigenous fish cause problems for Gila topminnow as can nonindigenous crayfish (Fernandez and Rosen 1996) and bullfrogs.

Historically, the Gila topminnow was abundant in the Gila River drainage and was one of the most common fishes of the Colorado River basin, particularly in the Santa Cruz system (Hubbs and Miller 1941). This has been reduced to only 15 naturally occurring populations. Presently, only 12 of the 15 recent natural Gila topminnow populations are considered extant (Table 1) (Weedman and Young 1997). Only three (Cienega Creek, Monkey Spring, and Cottonwood

Spring) have no nonindigenous fish present and therefore can be considered secure from nonindigenous fish threats. There have been at least 175 wild sites stocked with Gila topminnow, however, topminnow persist at only 18 of these localities. Of the 18, 1 site is outside topminnow historical range and four now contain nonindigenous fish (Weedman and Young 1997).

The Sonoran Topminnow Recovery Plan (USFWS 1984), which covers the Gila topminnow, established criteria for down- and delisting. Criteria for down-listing were met for a short period. However, due to concerns regarding the status of several populations, down-listing was delayed. Subsequently, the number of reestablished populations dropped below that required for down-listing, where it has remained. A draft revised recovery plan for the Gila topminnow is available (Weedman 1999). The plan's short-term goal is to prevent extirpation of the species from its natural range in the U.S. and reestablish it into suitable habitat within historical range. Downlisting criteria require a minimum of 82 reestablished populations, some of which must persist at least 10 years.

Table 1. Status of natural Gila topminnow populations in the US.

Site	Ownership	Extant?[1]	Nonindigenous?	Mosquitofish?	Habitat Size[2]	Threats[3]
Bylas Spring[5]	San Carlos	YES	NO[4]	NO[4]	S D	M/ N G
Cienega Creek	Bureau	YES	NO	NO	L	M/ R N
Cocio Wash	Bureau	NO 1982	UNKNOWN	UNKNOWN	S	H/ M
Cottonwood Spring	Private	YES	NO	NO[4]	S	M/ N
Fresno Canyon	State Parks	YES	YES	NO[4]	M	H/ N G U
Middle Spring[5]	San Carlos	YES	NO[4]	NO[4]	S	H/ N G
Monkey Spring	Private	YES	NO	NO	S	L/ W U
Redrock Canyon	USFS	YES	YES	YES	M D	H/ W R G N
Sabino Canyon	USFS	NO 1943	YES	NO	M	H/ R N
Salt Creek[5]	San Carlos	YES	NO[4]	NO[4]	S	M/ N G
San Pedro River	Private	NO 1976	YES	YES	-	H/ W N G R
Santa Cruz River San Rafael Tumacacori Tucson	Private, State Parks, TNC	 YES[6] YES NO 1943	 YES YES YES	 YES YES YES	L D	H/ W N R G C U
Sharp Spring	State Parks	YES	YES	YES	M	H/ N G U
Sheehy Spring	TNC	NO 1987	YES	YES	S	H/ N G U
Sonoita Creek	Private, TNC, State Parks	YES	YES	YES	L D	H/ W N G
Tonto Creek	Private, USFS	NO 1941	YES	YES	L	H/ N R G W

[1] if no, last year recorded
[2] L = large M= medium S = small D = disjunct
[3] Immediacy H = high M = moderate L = low
Type W = water withdrawal C = contaminants R = recreation N = nonindigenous G = grazing M = mining
U = urbanization
[4] none recently, they have been recorded multiple times
[5] recently renovated
[6] in Mexico, US in 1993

The status of the species is poor and marginally stable. Gila topminnow has gone from being one of the most common fishes of the Gila basin to one that exists at about 30 localities (12 natural and 18 stocked). Many of these localities are small and highly threatened, and topminnow has not been found in recent surveys at some sites.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area; the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Most land in the area is owned by Santa Cruz County, the City of Nogales, or private land owners. This section of the Santa Cruz River likely supported permanent flows until relatively recently. Development, watershed changes, ground water withdrawal, and surface water withdrawal have all contributed to the loss of perennial flow. This reach of the river is now ephemeral, flowing only in response to precipitation events. It is likely that Gila topminnow occurred historically, at least periodically, in this reach of the Santa Cruz.

Status of the species within the action area

The Gila topminnow occupies perennial reaches of the Santa Cruz River including the San Rafael Valley north of Locheil, and the main river channel in Sonora, Mexico. They are also found in the 20 mile-long reach of the Santa Cruz River below the Nogales International Wastewater Treatment Plant. Gila topminnow are also found in Sonoita Creek, which flows into the Santa Cruz River about seven miles downstream of the project area (Weedman and Young 1997). Topminnow occur in Sonoita Creek above and below Patagonia Lake.

It is not known what the geographical extent of Gila topminnow in the Santa Cruz in Mexico is, nor what their population numbers are. However, it is highly likely that Gila topminnow from the Santa Cruz drainage upstream of the project area move through the site at least periodically. The Gila topminnow in the Santa Cruz below the Nogales treatment plant show genetic characteristics consistent with topminnow found in Sharp Spring in the San Rafael Valley (Hedrick et al. 2001). Movement by topminnow through the Santa Cruz River, including the project area, is the most likely mechanism of genetic exchange between these two areas and is consistent with theories on how Gila topminnow populations behaved historically (Minckley 1999).

The Santa Cruz River in the project area is normally dry. During periods of flow, it is possible that dispersing or flood-displaced Gila topminnow occasionally pass through or remain in the project area.

Effects of the Action

The Santa Cruz River within the project area is ephemeral, and project construction in the riverbed will not occur when flow is outside of the temporary diversion channels. There is the potential for fish, including the Gila topminnow, to occur in the project area when there is flow. To minimize harm to fish, ADOT will divert flows away from the construction area. If low to moderate flows occur in the project area at the start of construction, project biologists will remove fish from the section of river to be diverted using block seines. Block seines will be removed after the diversion is complete. Any fish remaining in the area outside of the diversion will be moved downstream. The fish removal effort will be repeated when the river is rediverted to the opposite side of the channel. Dependent on rainfall and project timing, it is possible that the river may not flow at all during construction or flow very little. Despite these measures to reduce the impact to fish in the Santa Cruz River within the project area, there is the possibility that Gila topminnows will be lost as a result of project construction activity.

If water is present during creation of the diversion channel, Gila topminnow could be killed or injured by vehicles and equipment in the stream. Tom Newman (Coronado National Forest, pers. comm.) located a dead Sonora chub (*Gila ditaenia*) at the Ruby Road crossing of Sycamore Canyon west of Nogales that had apparently been splashed up onto the bank by a passing vehicle. Similar mortality or crushing of Gila topminnow could occur during the project. Mortality could also occur as a result of proposed capture, holding of fish, and subsequent release back into the Santa Cruz. This activity, even without injury or mortality of fish, is considered take under section 9 of the Act and is illegal without proper permits from the Fish and Wildlife Service and Arizona Game and Fish Department. Effects to Gila topminnow could also occur by contamination of water via accidental hazardous materials spills or leachates from the concrete.

Environmental contamination can occur from toxic leachates in the concrete scour decks. Some fish will elude capture, and the fish released downstream after capture may be subject to construction-related effects. Fresh concrete leaches salts, lime, catalysts, and potentially other toxic materials that are toxic to fish for a period of up to nine months. Gila topminnow and desert pupfish were killed by leachates from concrete fish ponds constructed at the Phoenix Zoo (M. Demlong, AGFD, Phoenix, pers. comm., 2000). Toxic conditions can remain for longer than nine months if petroleum sealers are used on the concrete to extend drying times. Two-part epoxy concrete sealants are available to prevent leaching of toxins into water; however, the sealant itself can be toxic unless approved for potable water use. Use of such sealants is not possible for this project because the concrete would be poured in place, thus the underside of the scour protection deck cannot be treated. The degree to which the concrete scour protection decks will leach toxic materials into the Santa Cruz River is unknown; however, we would expect such effects to be most extreme at the bridges and immediately downstream of the bridges. The distance from the bridges at which effects to fish attenuate and the length of time necessary for leachates to move through or disperse from the system, or be diluted to the point where they no

longer cause adverse effects, are unknown. Gila topminnow in the permanent reach of the Santa Cruz downstream from the project area are at least 10 miles downstream. It is unlikely that Gila topminnow would remain in the project area long, due to the area's ephemeral flow and marginal habitat. Therefore, we do not expect contaminants associated with construction to cause take of Gila topminnow.

If storms or floods are expected that would cause flow outside of the temporary diversion channel, ADOT would remove their equipment from the channel, thus eliminating the possibility of equipment or vehicles becoming mired in the stream where they might alter stream hydrology and geomorphology, and perhaps release petroleum products or other contaminants. Construction equipment would not be stored, fueled, or maintained in or near the stream channel to avoid potential contamination. ADOT proposes to use best management practices to prevent spills of hazardous materials, and they will use containment provisions in the event of a spill.

Because no separate actions are expected to occur as a result of the replacement of the SR 82 Santa Cruz River Bridge and associated roadway improvements, no indirect effects on the Gila topminnow are anticipated. However, maintenance of the bridge will be required after project construction. Bridge and roadway maintenance may require activity in the Santa Cruz River channel. It is possible these actions could occur when there is flow in the channel and Gila topminnow are present. Because of this, it is possible that Gila topminnow could be affected by the action.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation under section 7 of the Act.

The Guevavi Ranch, where the City of Nogales takes some of its groundwater, is a few miles downstream of the proposed project site. Water withdrawals at this site may be negatively impacting surface and subsurface water flows and riparian and upland vegetation. The Kino Springs development is upstream of the area. Continued development in this area may lead to additional groundwater withdrawals, changes to the watershed and hydrological functioning of the Santa Cruz River, environmental contaminants, and the release of nonindigenous species. The expected increased population in the area will likely result in increased woodcutting and recreation, such as off-highway vehicle use, fishing, and camping. Vehicle use in the river can destabilize banks and destroy riparian vegetation, and fish could be run over or splashed from shallow ponds. Fishing and use of live bait could result in introduction of nonindigenous fishes that may compete with or prey upon Gila topminnow. Camping could result in fires that destroy riparian vegetation. A diesel fuel spill in Mexico in 2001 that spread through the project area illustrates that actions occurring far upstream may affect Gila topminnow.

CONCLUSION

After reviewing the current status of the Gila topminnow, the environmental baseline for the action area, the effects of the proposed State Route 82 Santa Cruz River Bridge Project, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the endangered Gila topminnow. No critical habitat has been designated; thus, none would be affected. We base this conclusion on the following:

1. Gila topminnow do not reside at the site;

2. The site currently provides only temporary Gila topminnow habitat and is unlikely to provide more than that during the project.

3. ADOT has included measures in the proposed action to minimize the likelihood of hazardous materials spills, to minimize the project footprint, to avoid sensitive areas as much as possible, and to restore areas degraded during construction.

4. The mitigating measures proposed by ADOT will minimize impacts to and take of the species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations following section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). "Harass" is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering (50 CFR 17.3). "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the FHWA so that they become binding conditions of any grant or permit issued to the permittee, as appropriate, for the exemption in section 7(o)(2) to apply. The FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require the permittee to adhere to the terms

and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the FHWA or permittee must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement [50 CFR §402.14(I)(3)].

AMOUNT OF EXTENT OF TAKE ANTICIPATED

We anticipate that incidental take of the Gila topminnnow will be difficult to detect for the following reasons: dead fish are difficult to find, cause of death may be difficult to determine, and losses may be masked by seasonal fluctuations in numbers or other causes. However, take of Gila topminnow may occur during construction of the diversion, movement of fish, and project maintenance. In cases where the extent of anticipated take cannot be quantified accurately in terms of number of individuals, we may anticipate take in terms of loss of a surrogate species, food, cover, or other essential habitat elements, such as water quality or quantity (US Fish and Wildlife Service 1998b). An approach whereby take is quantified both in terms of numbers of fish and degradation of habitat is warranted in this case. We anticipate the following forms of take:

1. All Gila topminnow in the project area in the form of capture and harassment, as fish are captured, held, and released immediately back into the river into the most promising nearby habitat (judged on permanence or connection to permanent habitat).

2. Up to 10 Gila topminnow as a result of mortality due to stress during proposed capture and holding of fish.

3. Up to 20 Gila topminnow as a result of mortality or injury during construction of the diversion channel.

Because dead or injured Gila topminnow will be difficult to detect, the following will also indicate that take, as measured in items 2 and 3, has been exceeded:

More than 40 fish of any species are found dead in the Santa Cruz River during required monitoring, beginning at the upstream end of the project area to 300 feet downstream of the end of the project area.

4. Up to 50 Gila topminnow as a result of mortality or injury caused by vehicle or equipment use in the Santa Cruz River during maintenance activities.

Because dead or injured Gila topminnow will be difficult to detect, the following will also indicate that take, as measured in item 5, has been exceeded:

More than 100 fish of any species are found dead in the Santa Cruz River during required monitoring during construction, beginning at the upstream end of the maintenance area to

300 feet downstream of the end of the maintenance area.

EFFECT OF TAKE

In this biological opinion, we find that the anticipated level of take is not likely to jeopardize the continued existence of the endangered Gila topminnow. No critical habitat has been designated; thus, none would be affected.

REASONABLE AND PRUDENT MEASURES and Terms and Conditions

The following reasonable and prudent measures are necessary and appropriate to minimize the take of Gila topminnow. To be exempt from the prohibitions of section 9 of the Act, the FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures and outline required reporting and monitoring requirements. We assume implementation of the proposed action as stated; thus those measures do not need to be restated here. These terms and conditions will be non-discretionary.

1. Personnel education programs, defined construction areas, and well-defined operational procedures shall be implemented during construction.

    1.1. The FHWA shall designate a field contact representative (FCR) who shall be responsible for overseeing compliance with these terms and conditions and proposed minimization measures, and shall also be responsible for coordination on compliance with the FWS. The FCR shall have the authority and the responsibility to halt all project activities that are in violation of these terms and conditions. The FCR shall have a copy of the terms and conditions and proposed minimization measures of this biological opinion while on the work site. The FCR does not have to be a biologist. The FCR should have contact telephone numbers for Phoenix and Tucson offices.

    1.2. Construction personnel shall be informed of terms and conditions and proposed minimization measures herein, and the need to comply with them.

2. Proposed capture of fish shall be designed to salvage and hold as many fish as is practicable that may be adversely affected by the proposed action. Protocols shall be developed and implemented to minimize the effects on Gila topminnow of proposed capture, holding, and release.

    2.1. If any surface water exists in the Santa Cruz River during work in the channel, the following terms and conditions shall be implemented:

        2.1.1. Proposed capture of fish shall follow established protocols. Identity of Gila topminnow shall be confirmed by at least one fisheries biologist

able to identify topminnow and mosquitofish.

2.1.2. Only qualified fisheries biologists permitted by us and the Arizona Game and Fish Department shall capture and transport Gila topminnow.

2.2. When possible, ADOT shall wait until there is no flow at the site before constructing the diversion or doing maintenance.

3. The FHWA shall monitor implementation of the proposed action and any resulting incidental take and report to us the findings of that monitoring.

3.1. The FHWA shall monitor implementation of the proposed action and these terms and conditions. A qualified biological monitor shall be present in the project area each day construction crews work in the channel when water is present. During monitoring, the monitor shall document and record any take of Gila topminnow, dead fish of any species, and take notes on the condition of the habitat. We encourage development of a standard form to record these data. A brief written report shall be prepared by the biological monitor summarizing the results of such monitoring and documentation; the report shall also describe any deviations from the proposed action, and procedures and results of fish captures, transport, holding, and release. This report shall be submitted to us within one year of completion of construction. The report shall also make recommendations, as needed, for modifying or refining these terms and conditions to enhance protection of the Gila topminnow or reduce needless hardship on the FHWA and its applicant.

Disposition of Dead or Injured Listed Animals

Upon finding a dead or injured threatened or endangered animal, initial notification must be made to the Service's Division of Law Enforcement, Federal Building, Room 8, 26 North McDonald, Mesa, Arizona (602) 261-6443 within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph, and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact specimens of listed animal species shall be submitted as soon as possible to the nearest Service or Department office, educational, or research institutions (e.g., University of Arizona) holding appropriate State and Federal permits.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution before implementation of the action. A qualified biologist should transport injured animals to a qualified veterinarian. Should any treated listed animal survive, we should be

contacted regarding the disposition of the animal.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information on listed species. The recommendations provided here do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibilities for the Gila topminnow. To further the purposes of the Act, we recommend implementing the following discretionary actions:

1. The FHWA should work with us and the Arizona Game and Fish Department to reestablish the Gila topminnow into suitable habitats (Recovery Plan Task 2; Weedman 1999).

2. The FHWA and ADOT should work with us and the Arizona Game and Fish Department to begin an aggressive program to ensure that nonindigenous aquatic organisms are not introduced to the action area, and if they are, to support actions to remove them (Recovery Plan Task 1.4, 2.4; Weedman 1999).

3. FHWA and ADOT should design bridges that span the entire floodplain, so that floodplain function is not impaired (Recovery Plan Task 1.3, 2.3; Weedman 1999).

4. The box culvert proposed for Proto Canyon Wash and other box culverts should follow Rosgen design specifications (Rosgen 2001). In a box culvert with three sections, the middle section is built at a lower elevation, corresponding to the main channel, to handle smaller flows (up to bankfull). The two outer sections handle floods greater than bankfull. This design, when placed across the width of the floodplain, minimizes impacts of the structure to stream function and minimizes sediment build-up and the maintenance associated with it in the culvert. Refer to the appendix for a stylized design (Recovery Plan Task 2.3; Weedman 1999).

In order that we be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation and conference on the action outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law)

and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect the species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Thank you for your efforts to minimize the impacts of the proposed project on Arizona's native fishes and the conservation and recovery of the Gila topminnow. If you have questions regarding this biological opinion or the consultation process, please contact Doug Duncan (520) 670-4860, or Sherry Barrett (520) 670-4617 of our Tucson Ecological Services Suboffice.

Sincerely,

/s/ Steven L. Spangle
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)

John Kennedy, Habitat Branch, Arizona Game & Fish Department, Phoenix, AZ
Regional Supervisor, Arizona Game and Fish Department, Region 5, Tucson, AZ

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APPENDIX

Sample Design for Box Culvert

Figure 2. Culvert cross section.

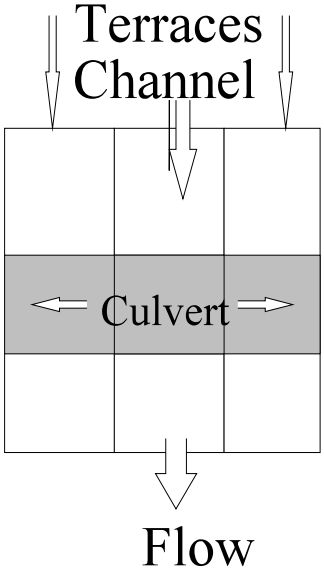

Figure 1. Top view of box culvert location.